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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHEVALIER, ALICIA ANN

ART UNIT

PAPER NUMBER

1794

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/765,707	Applicant(s) WELLMAN ET AL.	
	Examiner ALICIA CHEVALIER	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/22/09.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15,28,31-34,36-54 and 57-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15,28,31-34,36-54 and 57-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

RESPONSE TO AMENDMENT

1. Claims 15, 28, 31-34, 36-54 and 57-60 are pending in the application, claims 1-14, 16-27, 29, 30, 35, 55 and 56 have been cancelled.
2. Amendments to the claims, filed on January 22, 2009, have been entered in the above-identified application.

REJECTIONS

3. **The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

Claim Rejections - 35 USC § 103

4. Claims 15, 28, 31-34, 47-51, 53-56 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Vliet (USPN 4,099,749) in view of Shea (USPN 5,383,994) and Williams et al (USPN 5,961,154).

Regarding claims 15, 33, 34 and 58, van Vliet teaches a duct assembly (Figure 1 and col.1, 1.5-16) comprising a slip collar (reference number 2, Figure 1) comprising a tubular outer wall portion, a tubular inner wall portion, an intermediate portion disposed between the tubular outer wall portion and the tubular inner wall portion, a first slot region defined by the tubular outer wall portion and the tubular inner wall portion (reference number 2, Figure 1). The first and second slot regions face away from each other and the slip collar is an integral one-piece structure (reference number 2, Figure 1). A first duct including a first end is inserted into the

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first slot region (reference number 1, Figure 1). A second duct including a second end is inserted into the second slot region (reference number 1', Figure 1). The first end and second end each have a constant diameter.

Van Vliet teaches that the coupling sleeve is sued to connect to air channels of an air circulation or conditioning system, but fails to teach of what material the slip collar is formed. However, Shea teaches that fiberglass reinforced plastics are preferred in the formation of air channel systems (col.1, 1.44-47). One of ordinary skill in the art would have recognized that duct joints and ducts themselves are made completely form fiberglass reinforced plastics because it is well known that fiber reinforced ducts are lighter than metal ducts and are a preferred material for air duct systems, as taught by Shea.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select a fiberglass reinforced plastic material for the coupling sleeve of van Vliet in order to provide a fire resistant duct assembly that is lighter in weight, as taught by Shea.

Van Vliet and Shea taken as a whole teach all that is claimed in claim 15 as shown above, but fails to teach additional connecting elements to further strengthen the connection between the ducts and the coupling device. However, Williams et al teach that slip collars are formed with set screws and/or adhesive compositions applied in the slot regions comprised of novolac or epoxy resin (col.4, 1.2-4) of the slip collar to provide additional connection strength between the ducts and the coupling device (reference number 94, Figure 7 and reference number 38, Figure 1).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to add set screws and/or adhesive composition such as novolac or epoxy resin to the slot regions of the coupling device of van Vliet in order to add additional connection strength between the ducts and coupling device, as taught by Williams et al.

Regarding claim 28, van Vliet fails to teach that the outer wall portion and inner wall portion comprise different polymeric materials. However, Shea teaches that two major problems are faced when using fiberglass reinforced plastic materials and not any metal in duct systems including fire resistance and chemical resistance. Shea goes on to teach that in order to overcome these issues the ducts are formed having an inner wall portion and outer wall portion in the same manner as the van Vliet duct joint assembly. Shea teaches that the matrix used to form the outer wall portion is a phenol resorcinol type fire retardant resin and the inner tubular wall portion is formed of a vinyl ester (col.3, 1.9-15). One of ordinary skill in the art also would have recognized that the ducts as well as the joints require a fire resistant outer portion and chemical resistant inner portion in order to function adequately as a duct assembly, as taught by Shea.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select a fiberglass reinforced phenol resorcinol material for the outer tubular portion of van Vliet in order to provide a fire resistant outer portion that is lighter in weight, as taught by Shea, and to use vinyl ester as the resin in the fiberglass reinforced material in the inner portion of the duct joint of van Vliet, in order to provide chemical resistance, as taught by Shea. Thus, the slip collar of van Vliet and Shea combined is free of metal.

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Regarding claims 31-32, van Vliet fails to teach the thickness of the outer wall portion of the coupling sleeve, but Williams et al teaches that thickness within the claimed range of 3/16-inch to about 1-1/2 inches are common in forming coupling sleeves for air ducts (col.7, l.18-24).

Regarding claim 47, the slip collar is formed first and after the slip collar is formed the first end of the duct is inserted into the first slot region and the second end of the second duct is inserted into the second slot region (col.1, l.19-33).

Regarding claims 48-51, the claims are written as product by process claims and only the structure taught by the product is given patentable weight. When an article made by a different process is found to be substantially the same, the burden is shifted to the applicant to show an unobvious difference. To show an unobvious difference applicant must provide evidence such as unexpected results provided by forming the article with the different process.

Regarding claim 53, Shea teaches that the fibers may include graphite, carbon, or ceramic to provide to provide increased strength and fire resistivity (col.5, l.27-29).

Regarding claim 54, the slip collar is curved (Figure 4).

Regarding claims 55 and 56, Shea teaches the cured phenolic resin comprises phenol-aldehyde or resorcinol-aldehyde (col.2, l.16-19).

5. Claims 36-39, 41-44, 46, 52, 57, 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Vliet (USPN 4,099,749) in view of Shea (USPN 5,383,994), Williams et al (USPN 5,961,154) and Jacobson et al. (USPN 6,213,522).

Regarding claims 36, 42, 43, 52, 57 and 60, van Vliet teaches a duct assembly (Figure 1 and col.1, l.5-16) comprising a slip collar (reference number 2, Figure 1) comprising a tubular outer wall portion, a tubular inner wall portion, an intermediate portion disposed between the

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tubular outer wall portion and the tubular inner wall portion, a first slot region defined by the tubular outer wall portion and the tubular inner wall portion (reference number 2, Figure 1). The first and second slot regions face away from each other and the slip collar is an integral one-piece structure (reference number 2, Figure 1). A first duct including a first end is inserted into the first slot region (reference number 1, Figure 1). A second duct including a second end is inserted into the second slot region (reference number 1', Figure 1). The first end and second end each have a constant diameter.

Van Vliet teaches that the coupling sleeve is used to connect to air channels of an air circulation or conditioning system, but fails to teach of what material the slip collar is formed. However, Shea teaches that fiberglass reinforced plastics are preferred in the formation of air channel systems (col.1, l.44-47). One of ordinary skill in the art would have recognized that duct joints and ducts themselves are made completely from fiberglass reinforced plastics because it is well known that fiber reinforced ducts are lighter than metal ducts and are a preferred material for air duct systems, as taught by Shea.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select a fiberglass reinforced plastic material for the coupling sleeve of van Vliet in order to provide a fire resistant duct assembly that is lighter in weight, as taught by Shea.

Van Vliet and Shea taken as a whole teach all that is claimed in claim 36 as shown above, but fails to teach additional connecting elements to further strengthen the connection between the ducts and the coupling device. However, Williams et al teach that slip collars are formed with set screws and/or adhesive compositions applied in the slot regions comprised of novolac or

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epoxy resin (col.4, l.2-4) of the slip collar to provide additional connection strength between the ducts and the coupling device (reference number 94, Figure 7 and reference number 38, Figure 1).

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to add set screws and/or adhesive composition such as novolac or epoxy resin to the slot regions of the coupling device of van Vliet in order to add additional connection strength between the ducts and coupling device, as taught by Williams et al.

Van Vliet, Shea and Williams taken as a whole teach all that is claimed in claim 36 as shown above, but fails a curved section comprising apertures. However, Jacobson et al. teach that slip collars comprise apertures on a curved section and wherein set screws are disposed in the apertures to provide additional strength once the duct work is assembled (col. 2, l. 30-34). The apertures are positioned in pairs comprising a first aperture and second aperture fore each pairs (figure 5).

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to add apertures to the curved section to the device of van Vliet in order to provide additional strength once the duct work was assembled, as taught by Jacobson.

Regarding claims 37, 41, and 44, van Vliet fails to teach that the outer wall portion and inner wall portion comprise different polymeric materials. However, Shea teaches that two major problems are faced when using fiberglass reinforced plastic materials and not any metal in duct systems including fire resistance and chemical resistance. Shea goes on to teach that in order to overcome these issues the ducts are formed having an inner wall portion and outer wall portion in the same manner as the van Vliet duct joint assembly. Shea teaches that the matrix

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used to form the outer wall portion is a phenol resorcinol type fire retardant resin and the inner tubular wall portion is formed of a vinyl ester (col.3, 1.9-15). One of ordinary skill in the art also would have recognized that the ducts as well as the joints require a fire resistant outer portion and chemical resistant inner portion in order to function adequately as a duct assembly, as taught by Shea.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select a fiberglass reinforced phenol resorcinol material for the outer tubular portion of van Vliet in order to provide a fire resistant outer portion that is lighter in weight, as taught by Shea, and to use vinyl ester as the resin in the fiberglass reinforced material in the inner portion of the duct joint of van Vliet, in order to provide chemical resistance, as taught by Shea. Thus, the slip collar of van Vliet and Shea combined is free of metal.

Regarding claim 38, van Vliet teaches that the coupling sleeve can be used as an end cap in which it would be obvious that the sleeve would contain only one slot region (col.2, 1.39-40).

Regarding claim 39, the tubular inner wall portion is shorter than the tubular outer wall portion (reference 3, Figure 4).

Regarding claim 46, the slip collar is formed first and after the slip collar is formed the first end of the duct is inserted into the first slot region and the second end of the second duct is inserted into the second slot region (col.1, 1.19-33).

Regarding claim 52, the interior surface of the tubular outer wall portion and the surface of the tubular inner wall surface facing the slot region are smooth (Figure 1).

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Regarding claim 59, van Vliet fails to disclose the claimed thickness of the inner wall portion. However, where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges in thickness involves only routine skill in the art. MPEP 2144.05.

6. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Vliet in view of Shea, Williams et al and Jacobson et al. as applied to claim 36 above, and further in view of Nishio (USPN 6,045,164).

Van Vliet, Shea and Jacobson et al. teach all that is claimed in claim 36 as presented above, but fail to teach that the tubular inner wall portion comprises a fluoropolymer material. However, Nishio teaches that fluoropolymers such as polytetrafluoroethylene are superior in resistance to chemicals and heat (col.4, l.43-53). One of ordinary skill in the art would have recognized that fluoropolymers that are superior in resistance to chemicals and heat would be beneficial in use in forming the chemical resistant portion of a fume duct joint. One of ordinary skill in the art would have also recognized that van Vliet, Shea, and Nishio are analogous insofar as both references are concerned with joints between tubular articles made of resins that require chemical resistance.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to form the tubular inner wall portion of van Vliet so that it includes a fluoropolymer material since Nishio teaches that fluoropolymers are well known in the art of tube joints and connectors to be chemical and heat resistant.

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7. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Vliet in view of Shea, Williams et al and Jacobson et al. as applied to claim 36 above, and further in view of Narukawa et al (USPN 4,433,020).

Van Vliet, Shea and Jacobson et al. teach all that is claimed in claim 36 as presented above, but fail to teach that the fiberglass reinforced plastic material comprises chopped strand mat. However, Narukawa et al teach that when forming fiberglass reinforced plastics in the formation of exhaust ducts the glass fibers are prepared from chopped strands (col.1, 1.8-12, col.2, 1.55-56, and col.8, 1.25-30 and 55-59). Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to form fiberglass reinforced plastics used in the formation of ducts from chopped strands, as taught by Narukawa et al.

Thus, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to form the fiberglass reinforced slip collar of van Vliet and Shea from chopped strands because they are a common method of forming fiberglass reinforced plastics for use in the formation of ducts, in which the slip collar is used, as taught by Narukawa et al.

ANSWERS TO APPLICANT'S ARGUMENTS

8. Applicant's arguments in the response filed January 22, 2009 regarding the rejection of claim 15 of record have been carefully considered but are deemed unpersuasive.

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Applicant argues that the references of record do not disclose wherein the tubular outer portion includes apertures and wherein set screws are disposed in the apertures. Rather Williams discloses that the screws are in apertures that are present in flat flanges.

Applicant's claim 15 recites "A duct assembly *comprising* ... and wherein the tubular wall outer portion includes a curved section *including* apertures, and wherein set screws are disposed n the apertures." Applicant's claim language does not exclude the embodiment disclosed by Williams in which the screws are in apertures that are present in flat flanges, since the curved section of the tubular wall outer portion only has to include apertures. There are no limitations in claim 15 that specify that the apertures located *only* on the curved section of the tubular wall outer portion.

9. Applicant's arguments in the response filed January 22, 2009 regarding the rejection of claim 36 of record have been carefully considered but are deemed unpersuasive.

Applicant's arguments regarding the same features of claim 15 have already been addressed above.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia Chevalier whose telephone number is (571) 272-1490. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Alicia Chevalier/
Primary Examiner, Art Unit 1794
3/24/2009